CLAIMS

1. A swash plate type variable displacement hydraulic rotary machine comprising a tubular casing having at one end a swash plate support portion and at the other end a pair of supply/discharge passages, a rotational shaft rotatably supported in said casing, a cylinder block provided in said casing for rotation together with said rotational shaft and containing a plural number of axially extending cylinders in circumferentially spaced positions, a plural number of pistons reciprocally fitted in said cylinders of said cylinder block, a plural number of shoes attached to projected ends of said pistons projected from said respective cylinders, a swash plate having on a front side a smooth surface for guiding said shoes by sliding contact therewith and on a rear side a pair of leg portions tiltably supported by said swash plate support portion, a tilting actuator provided within said casing to drive said swash plate into a tilted position according to a tilting control pressure which is supplied to and from outside, hydrostatic bearings provided between said leg portions of said swash plate and said swash plate support portion in communication with said supply/discharge passages to keep contacting surfaces of said leg portions and said swash plate support portion in a lubricated state,

characterized in that said hydrostatic bearings comprises:

said hydrostatic bearing constituted by a first main hydrostatic bearing provided on one leg portion of said pair of leg portions, a second main hydrostatic bearing provided on the other leg portion, a first auxiliary hydrostatic bearing provided on said other leg portion at a position spaced from said second main hydrostatic bearing, and a second auxiliary hydrostatic bearing provided on said one leg portion at a position spaced from said first main hydrostatic bearing.

2. A swash plate type variable displacement hydraulic rotary machine as defined in claim 1, wherein said first main hydrostatic bearing is located in the vicinity of an acting point of a resultant force of hydraulic reaction forces exerted on said swash plate by said pistons radially on one side of said rotational shaft, and said second main hydrostatic bearing is located in the vicinity of an acting point of a resultant force of hydraulic reaction forces exerted on said swash plate by said pistons radially on the opposite side of said rotational shaft.

3. A swash plate type variable displacement hydraulic rotary machine as defined in claim 1, wherein said swash plate

is provided with a through hole between said pair of leg portions to insert said rotational shaft leaving a gap therearound, and said first and second main hydrostatic bearings are located closer to said through hole and have a larger effective bearing surface area as compared with said first and second auxiliary hydrostatic bearings.

4. A swash plate type variable displacement hydraulic rotary machine as defined in claim 1, wherein first and second slide bearings are provided on said pair of leg portions at positions more radially distant from said rotational shaft than said first and second main hydrostatic bearings and said first and second auxiliary hydrostatic bearings.

5. A swash plate type variable displacement hydraulic rotary machine as defined in claim 1, wherein said first main hydrostatic bearing and said first auxiliary hydrostatic bearing are communicated with one of said supply/discharge passages through an oil passage, while said second main hydrostatic bearing and said second auxiliary hydrostatic bearing are communicated with the other one of said supply/discharge passages through another oil passage.

6. A swash plate type variable displacement hydraulic rotary machine as defined in claim 1, wherein said first main hydrostatic bearing and said first auxiliary hydrostatic bearing are communicated with one of said supply/discharge passages through an oil passage having a throttle for commonly adjusting an amount of pressure oil to be supplied to said first main and auxiliary hydrostatic bearings, while said second main hydrostatic bearing and said second auxiliary hydrostatic bearing are communicated with the other one of said supply/discharge passages through another oil passage having an another throttle for commonly adjusting an amount of pressure oil to be supplied to said second main and auxiliary hydrostatic bearings.

7. A swash plate type variable displacement hydraulic rotary machine as defined in claim 1, wherein said first main hydrostatic bearing and said first auxiliary hydrostatic bearing are communicated with one of said supply/discharge passages through oil passages each having discrete throttles for adjusting an amount of pressure oil to be supplied to said first main and auxiliary hydrostatic bearings separately and independently of each other, while said second main hydrostatic bearing and said second auxiliary hydrostatic

bearing are communicated with the other one of said supply/discharge passages through the other oil passages each having another discrete throttles for adjusting an amount of pressure oil to be supplied to said second main and auxiliary hydrostatic bearings separately and independently of each other.

8. A swash plate type variable displacement hydraulic rotary machine as defined in claim 1, wherein said first main hydrostatic bearing and said first auxiliary hydrostatic bearing are communicated with said one supply/discharge passage by way of a common oil passage being in communication with said one supply/discharge passage at one end and extended toward said first main and auxiliary hydrostatic bearings at the other end, and branched oil passages provided at said other end of said common oil passage and connected separately to said first main hydrostatic bearing and said first auxiliary hydrostatic bearing; and said second main hydrostatic bearing and said second auxiliary hydrostatic bearing are communicated with said the other supply/discharge passage by way of another common oil passage being in communication with said the other supply/discharge passage at one end and extended toward said second main and auxiliary

hydrostatic bearings at the other end, and another branched oil passages provided at said other end of said common oil passages and connected separately to said second main hydrostatic bearing and said second auxiliary hydrostatic bearing.

9. A swash plate type variable displacement hydraulic rotary machine as defined in claim 8, wherein a common throttle is provided in said common oil passage thereby to adjust an amount of pressure oil to be supplied from said one supply/discharge passage to said first main and auxiliary hydrostatic bearings, and discrete throttles are provided in said branched oil passages thereby to separately and independently adjust amounts of pressure oil to be supplied to said first main hydrostatic bearing and said first auxiliary hydrostatic bearing; and the other common throttle is provided in said another common oil passage thereby to adjust an amount of pressure oil to be supplied from said the other supply/discharge passage to said second main and auxiliary oil passages, and another discrete throttles are provided in said branched oil passages thereby to separately and independently adjust amounts of pressure oil to be supplied to said second main hydrostatic bearing and said second auxiliary hydrostatic

bearing.

10. A swash plate type variable displacement hydraulic rotary machine as defined in claim 1, wherein said swash plate is driven by said tilting actuator to tilt in both forward and reverse directions from a zero angle neutral position.

11. A swash plate type variable displacement hydraulic rotary machine as defined in claim 9, further comprising within said casing a regulator in the form of a servo valve having a spool within a control sleeve and adapted to supply said tilting control pressure to and from said tilting actuator in response to an external command signal, and a feedback mechanism adapted to feed back said control sleeve of said regulator according to a tilting movements of said swash plate;

said feedback mechanism comprising a conversion mechanism adapted to convert said tilting movements of said swash plate into an axial displacement as being located in an initial position at one axial end along said rotational shaft when said swash plate is in a neutral position, and as being displaced toward the other axial end from said initial

position when said swash plate is driven to tilt in forward or reverse direction, and

a displacement transmission member located between said conversion mechanism and said control sleeve of said regulator to transmit said axial displacement converted by said conversion mechanism to said control sleeve of said regulator.